REMARKS

Regarding the provisional non-statutory double-patenting rejection, Applicant submits herewith a terminal disclaimer obviating the rejection.

With respect to the Drawings, the Examiner has reiterated the position that Figures 1 and 2 should be labeled with a "PRIOR ART" legend. Applicant again disagrees with the Examiner and requests that the Examiner reconsider his position. In the Specification, Applicant has indicated that Figures 1 and 2 illustrate receivers configured in the Mux/Sync Control/Idle Cell Removal machine 196 to perform operations of Figure 4 steps 90 and 92 which relate to the invention claimed by Applicant. As such, Figures 1 and 2 do not illustrate a prior art receiver.

The Examiner has pointed to "general DSL modem" language in the Specification as supporting his position that Figures 1 and 2 illustrate the prior art. Applicant respectfully disagrees that the reference to a "general DSL modem" in the context of the illustrated transmitters is a concession that the Figures solely illustrate the prior art. What this statement says is that the transmitters, which illustrate embodiments of the invention including machine 196, can be used within general DSL modem technologies. As the Examiner is no doubt well aware, a DSL modem contains many parts, and the transmitter is just one part.

The Examiner has further pointed to a statement that the "general configuration and operation of such DSL transmitters is well known to those skilled in the art" as supporting his position that Figures 1 and 2 illustrate the prior art. Applicant respectfully disagrees that the reference to a "general configuration and operation" as being well known is a concession that the Figures solely illustrate the prior art. What this statement says is that the general operation of the transmitters is known, not that the whole figure illustrates that which is known. Rather, the

Examiner must read this statement in context with the statements which follow in Paragraph [50] wherein Applicant specifically indicates that a more detailed discussion of Figures 1 and 2 is provided only with respect to that which is necessary to understand the present invention. Applicant further states in Paragraph [50] that the operations of steps 90 and 92 of Figure 4, which the Examiner apparently concedes is not in the prior art, are performed by machine 196 shown in Figures 1 and 2. How could Figures 1 and 2 illustrate the prior art if they contain an illustrated component part which performs the steps of non-prior art Figure 4? Figures 1 and 2 accordingly illustrate transmitters in accordance with embodiments of the present invention, and thus should not be labeled as Prior Art.

In view of the foregoing, Applicant respectfully requests reconsideration of the objection to the drawings and withdrawal of same.

Claims 1-2, 4-14 and 16-34 remain pending in the application. Reconsideration of the claimed invention is requested.

Claims 1-2, 4-8, 10-14, 16-20 and 22-24 were rejected under 35 U.S.C. 103(a) as being unpatentable over the Applicant's Admitted Prior Art in view of Sonalkar.

Applicant had previously amended the claimed invention to recite that there exists a required multi-subcarrier bandwidth that is smaller than a total available multi-subcarrier bandwidth. The multi-subcarrier limitation emphasizes that the claimed operations occur with respect to a bandwidth containing multiple DSL subcarriers as opposed to a single subcarrier. Still further, the claims recite calculating crosstalk effects of that multiple DSL subcarriers bandwidth with respect to a plurality of subcarrier location positions and choosing a location position for that required multi-subcarrier bandwidth.

The Examiner responds to this argument by asserting that "Sonalkar also discloses generating a DSL signal comprising a multi-subcarrier." Applicant concedes that multi-subcarrier communications in DSL are well known. That, however, is not the focus of the claimed invention, and Applicant is not asserting a distinction over Sonalkar based solely on the existence of multiple subcarriers. What Applicant claims is the generation of a multi-subcarrier DSL signal, where the required multi-subcarrier bandwidth for a DSL communication carried by that multi-subcarrier DSL signal is less than the total available bandwidth, and further that the position of the required (smaller) multi-subcarrier bandwidth within the total bandwidth is tested for crosstalk noise effect at a plurality of subcarrier locations, and still further that the required (smaller) multi-subcarrier bandwidth is then located where a calculated crosstalk noise effect is minimized. This is illustrated by Applicant in Figures 8 and 9 which show the required (smaller) multi-subcarrier bandwidth 74 being positioned within the total bandwidth 72 so as to minimize crosstalk noise.

The teaching in Sonalkar of a multi-subcarrier DSL signal is irrelevant to the claimed invention unless Sonalkar further teaches that his multi-subcarrier DSL signal a) has a smaller bandwidth than the total available DSL bandwidth, b) is bandwidth tested at a plurality of subcarrier locations within the total available DSL bandwidth for crosstalk noise and c) is bandwidth positioned/located within the total available DSL bandwidth in a manner that minimizes crosstalk noise. The Examiner has failed to show how the Sonalkar multi-subcarrier DSL signal meets each of points a), b) and c), and thus Applicant respectfully submits that the prima facie case for rejection has not be met.

A distinguishing feature of the claimed invention over Sonalkar involves "calculating, for a plurality of subcarrier location positions of the required multi-subcarrier bandwidth for the new DSL loop communication within the total available multi-subcarrier bandwidth, a crosstalk noise effect of the new DSL loop communication with respect to the at least one active DSL loop" (language taken from Claim 1). In the context of the previous claim limitation, the DSL loop communication has "a required multi-subcarrier bandwidth that is smaller than a total available multi-subcarrier bandwidth" (language also taken from Claim 1). Thus, the operation for "calculating" tests this "required multi-subcarrier bandwidth" at "a plurality of subcarrier location positions ... within the total available multi-subcarrier bandwidth" for "crosstalk noise effect." In other words, it is the entire required multi-subcarrier bandwidth which is being crosstalk noise effect evaluated at a plurality of subcarrier location positions within the total available multi-subcarrier bandwidth. This claimed operation performed with respect to the "required multi-subcarrier bandwidth" is neither disclosed nor suggested by Sonalkar.

In Sonalkar, a teaching is provided for individually allocating bits to individual frequency bins that requires the least possible power for a maximum data rate (page 13, line 19-22). This minimizes total power consumption (page 14, lines 3-4). A modification of this process is then used to minimize NEXT (page 14, lines 5-7). This effectively forces the allocation of bits to lower frequency bins (page 14, lines 13-14) because NEXT effects are higher at higher frequencies than lower frequencies (page 11, lines 14-20). Thus, what is being taught in Sonalkar is a bit spreading algorithm for dividing the bits of the DSL communication between the allocated subcarriers in a way which minimizes NEXT effects. This process does not in any way test the required multi-subcarrier bandwidth at a plurality of subcarrier location positions

within the total available multi-subcarrier bandwidth for crosstalk noise effect (as claimed). The focus in Sonalkar is on bit spreading among subcarriers, NOT on positioning of the required subcarrier bandwidth within the total available bandwidth. These two concepts are completely different from each other.

To further assist the Examiner in understanding the foregoing distinctions, Applicant points out that Sonalkar teaches an N channel signal (page 9, lines 14-15). The focus of Sonalkar's invention is then the "allocation of bits" to those N channels (page 9, line 25). There is no indication in Sonalkar that a required bandwidth less than the total available bandwidth is calculated (i.e., N channels or subcarriers IS the required AND total available bandwidth). Instead, Sonalkar appears to try and use all of the available N subcarriers (frequency bins), and simply decides where to spread the bits among that total available bandwidth such that NEXT noise in controlled. Still further, there is no indication in Sonalkar that the positioning of required bandwidth of the DSL signal is being considered at a plurality of locations. Rather, the bandwidth location in Sonalkar appears to be fixed, and the only thing being location evaluated is where (i.e., in what channel) to place individual bits for communication.

In view of the foregoing, Applicant submits that claims 1 and 13 distinguish over the cited prior art.

Applicants further submit that the features recited in the dependent claims also appear to distinguish over Sonalkar.

For example, in claims 4 and 5, Applicant claims that the number of subcarriers needed for the required multi-subcarrier bandwidth varies based on which location position within the total bandwidth is being considered. Sonalkar teaches a fixed bandwidth of N frequencies and

does not in any way teach varying the number of subcarriers to be used. What does vary in Sonalkar is the degree to which subcarriers receive distributed communications bits. This bit/carrier focused teaching, however, does not teach or suggest varying, as a function of position, the number of subcarriers in the required bandwidth.

Similar arguments are made in favor of dependent claims 16 and 17.

Next, in claim 6, Applicant claims sliding the required bandwidth across the total bandwidth at the plurality of locations while making the crosstalk noise effect calculation. There is no teaching or suggestion in Sonalkar for any operations to slide bandwidths in the manner claims. Sonalkar teaches distributing bits among subcarriers based on NEXT effects, but does not teach moving (sliding) the subcarriers across the bandwidth as claimed.

Similar arguments are made in favor of dependent claim 18.

Claims 9, 21 and 25-34 were rejected under rejected under 35 U.S.C. 103(a) as being unpatentable over the Applicant's Admitted Prior Art in view of Sonalkar and Cole. Applicant respectfully traverses.

First, Applicant submits that claims 25-34 include limitations similar to those present in claims 1 and 13 with respect to the required bandwidth, total available bandwidth, and location selection of the required bandwidth within the total bandwidth to minimize crosstalk noise effect. Thus, claims 25-34 are patentable over the art for at least the same reasons as claims 1 and 13.

Second, while Cole does teach an idle cell removal process, that process is performed with respect to received communications and not with respect to the calculation of a required bandwidth for a communication, where that required bandwidth is less than a total bandwidth and the required bandwidth is then selectively positioned within the total bandwidth. In Cole,

the idle cell adjustment is made for the purpose of increasing/decreasing bit loading on the tones of the DSL communication. The idle cell calculation in Cole has nothing to do with determining a required bandwidth of the communication and then selecting that required bandwidth's position within a total available bandwidth.

In view of the foregoing, reconsideration of the application and allowance of all claims is respectfully requested.

Respectfully submitted,
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